Snippets

By “Skip” Distance

This is a collection of incidents, stories, happenings, illustrating some of the fun and hazards of Radar technology in the mid 1940s to mid 1950s.

In May 1951 P O Radio Electrician Doug Hawke was assigned to maintain the 960 Air Warning Radar aboard HMAS *Australia.* His first problem to address was to get the Trigger unit operating reliably. After many hours of frustrating and patient but unsuccessful work, Doug solved the problem by withdrawing the unit from its cabinet, placing it on a stool, and causing all available forced air outlets to be directed at it.

The next problem was that the output Lighthouse tubes repeatedly kept “blowing”, requiring replacement. Technical experts from the Leichhardt Radio Test Room were called in, and for a time there was much head scratching. Then PO RE John Scanlan noticed a blob of aerial insulation material hanging from underneath the cable where it joined the aerial filter unit. Somehow the aerial run had turned to carbon. Cable was replaced, and that fixed the premature demise of the Lighthouse tubes.

While in attendance, the Leichhardt boffins were directed to the Trigger unit problem. Inspection revealed that the ventilation for the cabinets had been wired in reverse. The hot air was blowing back down over the heat source, and apparently had been so doing for a long time.

For a brief period while operating out of Hong Kong, Doug was required to surrender his proprietorship of *Australia’s* 960 to a team of Intelligence people who connected a Panoramic Adaptor (Spectrum Analyser) to 960’s antenna, for the purpose of intercepting Chinese and Russian transmissions.

Chief Radio Electrician Phil (Lofty) Watson, tells a story to illustrate the considerable value of Radar operations being in the hands of capable operators. To have excellent equipment is not sufficient if the best is required of the Radar system.

It was in the late 1940s that an exceptionally heavy storm on the NSW east coast caused a large harbour pontoon (about 10 by 15 metres) to break free of its moorings in Newcastle harbour, and to be driven into the nearby off shore shipping lanes. The Newcastle Harbour authorities immediately issued a “Danger to Shipping” signal, and requested the RAN to initiate a search and locate exercise. HMAS *Quadrant,* then under the command of Captain Sam Beattie VC, on loan from the RN, was despatched forthwith from Garden Island, and shortly after commenced Radar sweeps. As well as “all hands to lookout”, the search Radars were the 293 and 277 10 centimetre sets suited to long range, supplemented by 974 (3 centimetre) navigation Radar.

After about an hour of nothing reported, one Radar operator reported an occasional very small blip occurring once every 3 or 4 antenna rotations. By persisting the operator was eventually able to confirm that “there is something there”. *Quadrant* was conned to approach and finally when only a very short distance away, the almost submerged pontoon was seen wallowing in the still very heavy swell. At best, only a few inches of the pontoon were visible above the surface of the sea, and this only for a few seconds as the waves washed over it. Indeed a hazard to shipping.

Lofty’s point is that whereas the Radar equipment was capable of picking up occasional echoes from the almost submerged pontoon, it was the skill and perseverance of the operator which caused the pontoon to be found.

Finding the recalcitrant pontoon was one thing, taking it in tow and proceeding back to Newcastle harbour at less than 3 knots all night in an uncomfortable heavy swell, was another matter to be told elsewhere at another time.

Greg Sharp recalls that in 1948 there was a problem with the 286 long range Radar installed at Watson’s Bay. The trace ‘bloomed’, the cause being a leakage through the double diode 6H6

connected to the grid of the CRO. A new component had just arrived from the UK, and it was called a solid state diode (later called a transistor). Greg fitted this and fixed the problem. It wasn't too many years later that the transistor became a household word.

Greg was a recipient of the R.N. Herbert Trust Fund Award for his work in adapting a Miller Transitron circuit to provide a stable linear sawtooth to improve the bearing accuracy of the 286 Radar.

Roy King was a HO RM, having joined the RAN as a "Rocky" on 29/10/1942. Following his recruit and technical training, an early appointment was to HMAS *Bunbury*, a Bathurst class minesweeper (Corvette). Roy reports:

Bunbury was fitted with both A272 and A276. Display for the A272 was the single line A scan image, whereas the A276 had the more advanced PPI display. A272's antenna was the big old square type.

Ray Brown, ex Ch RE, reports that 55 years on he still has a small tin containing gramaphone needles, obtained from Naval Stores, as spares for the A272 rotary spark gap electrodes.

On the topic of rotary spark gap, the Frigate *Culgoa* and Corvette *Cootamundra* had A276 Radar which had a rotary spark gap attached to one end of the motor generator which in turn powered the A276. The rotor of the spark gap rotated at 3,000 rpm and it had 10 electrodes to arc over the stationary electrode, thus producing a pulse repetition rate (PRR) of 500 pulses per second.

When running, the spark gap was adjusted by means of a knob to bring the spark to a fine blue colour for optimum operation. The stationary electrode wore away rapidly, and was constantly replaced to keep the spark sharp. The amplitude of the initial pulse shown on the A scan was a good indicator that the spark gap needed adjustment. As the elecrode began to deteriorate, the amplitude of the pulse would diminish.The spark discharged the line/modulator which in turn fired the transmitter.

Ray also relates the following story about the fast anti submarine frigate HMAS *Quickmatch* during the early 1950s. *Quickmatch* was engaged in an anti submarine exercise with her consort *Queenborough*, both at slow speed in a big ocean swell, and in contact with a submarine. In this state a large blue pennant is shown to give visual indication that the ship has a submarine contact.

Quickmatch was flying the pennant when it wrapped itself around the 974 Radar aerial, bringing the aerial's rotation to a shuddering halt. Ray was in the operations room at the time, and seeing the aerial rotation cease for no apparent reason, cut the power immediately. Using his initiative, he grabbed the nearest tools he could see, which were a broken kitchen knife and a hammer, rapidly scaled the superstructure and cleared the bunting from the aerial's moving parts. 974's training motor was belt driven, and because of this and Ray's quick action, the motor did not burn out, and *Quickmatch*'s 974 was operational again promptly.